

SCIENCE

18 December 1964

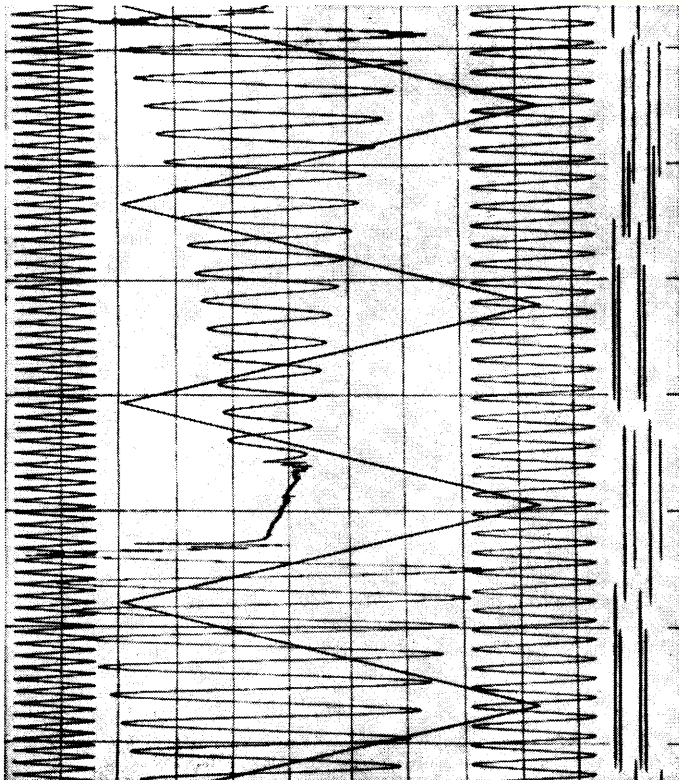
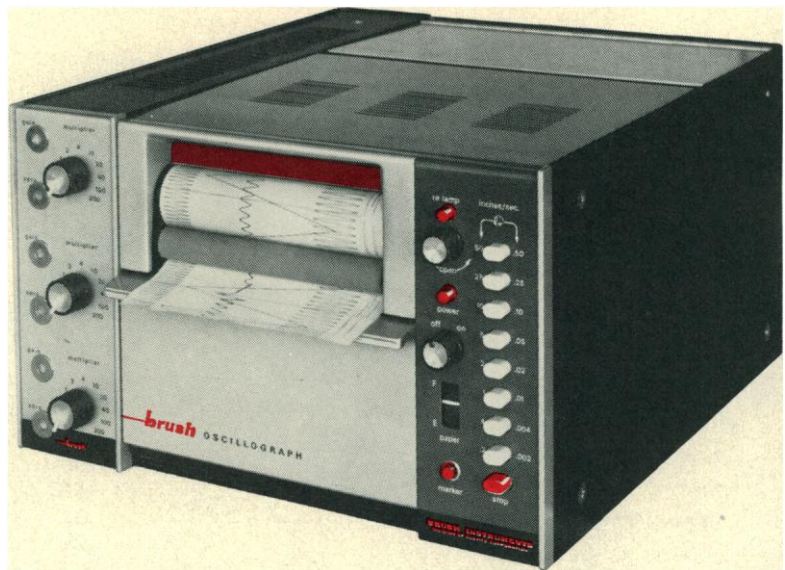
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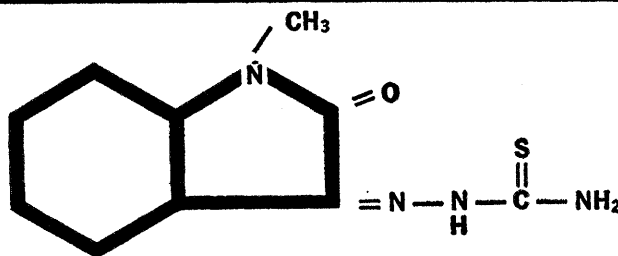


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Treatment of contacts began one day after admission as patients. They were observed for 16 days. During this time, only three mild cases of smallpox occurred among 1101 treated patients. Among a control group of 1126 untreated contacts, 78 cases of smallpox and 12 deaths occurred.

MIBT gave better results than were obtained with antivaccinal gamma globulin. And it can be made readily available and administered orally, thus simplifying administration to large groups.

Thompson, et. al. described antiviral activity of Isatin Beta Thiosemicarbazone in mice infected with vaccina virus (4). Easterbrook reported inhibition of infectious virus with IBT (1962) which resulted in immediate cessation of virus maturation and production. He suggested that IBT interfered with the process of maturation (5).

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References: (1) D. J. Bauer, L. St. Vincent, C. H. Kempe, A. W. Downie, Lancet, II, 494, (1963). (2) Lancet, II, 501, (1963). (3) C. H. Kempe, C. Bowles, G. Meiklejohn, T. O. Berge, L. St. Vincent, B. V. Sundara, Babu, S. Govindarajan, N. R. Ratnakannan, A. W. Downie, V. R. Murthy, Bull. Wild. Hlth. Org. (1961) 25, 41. (4) R. L. Thompson, S. A. Minton, J. E. Officer, G. H. Hitchings, J. Immunol (1953) 70, 225. (5) K. B. Easterbrook, Virology, 17, 245, (1962).

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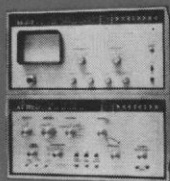
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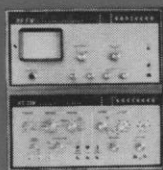
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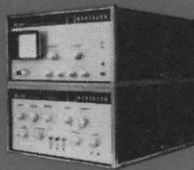
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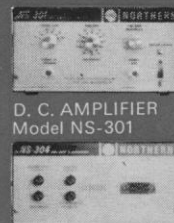
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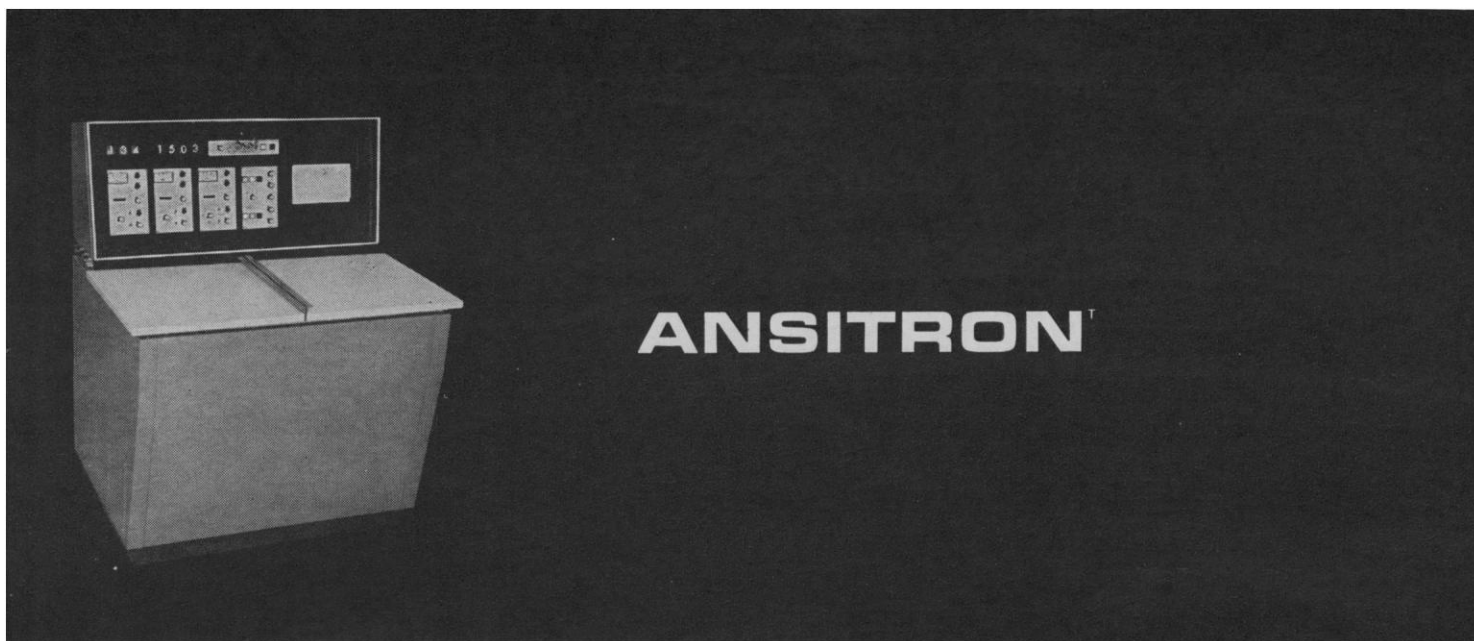
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The dynamic range of linear pulse-amplifiers for liquid scintillation is inadequate to cope with wide energy spreads. In early instrument designs having two channels, employing a single amplifier common to both channels, overall amplification was adjusted to examine the less energetic isotope at "balance-point" in one channel. The more energetic was counted in the second channel in integral fashion. Decay events from this isotope caused amplifier over-load thereby preventing accurate pulse height analysis.

More recently amplifiers preceded by separate attenuators have been inserted in each channel. Channel gain is individually adjusted, allowing differential counting in all channels. Though this technique

results in improved performance, its incorporation in the counting system has created new problems:

First, the problem of linear amplifier overload though lessened, still remains. Whenever an energetic event occurs, overload will still occur in the channel operated at higher gain to examine the less energetic isotope. Should a low energy event occur before the amplifier has recovered from overload, it is not counted. This difficulty is partially overcome with fast-recovery amplifiers. However, at high count rates, even with these amplifiers, count loss is evident. *Second*, duplication or triplication of amplifiers and attenuators has multiplied the number of operating controls thereby increasing the complexity of operation. *Third*, stability may be a problem; several presumably identical amplifier-attenuator systems may not show identical performance after aging or thermal stress. *Finally*, it is difficult to achieve reproducible settings when using considerable attenuation for energetic isotopes.

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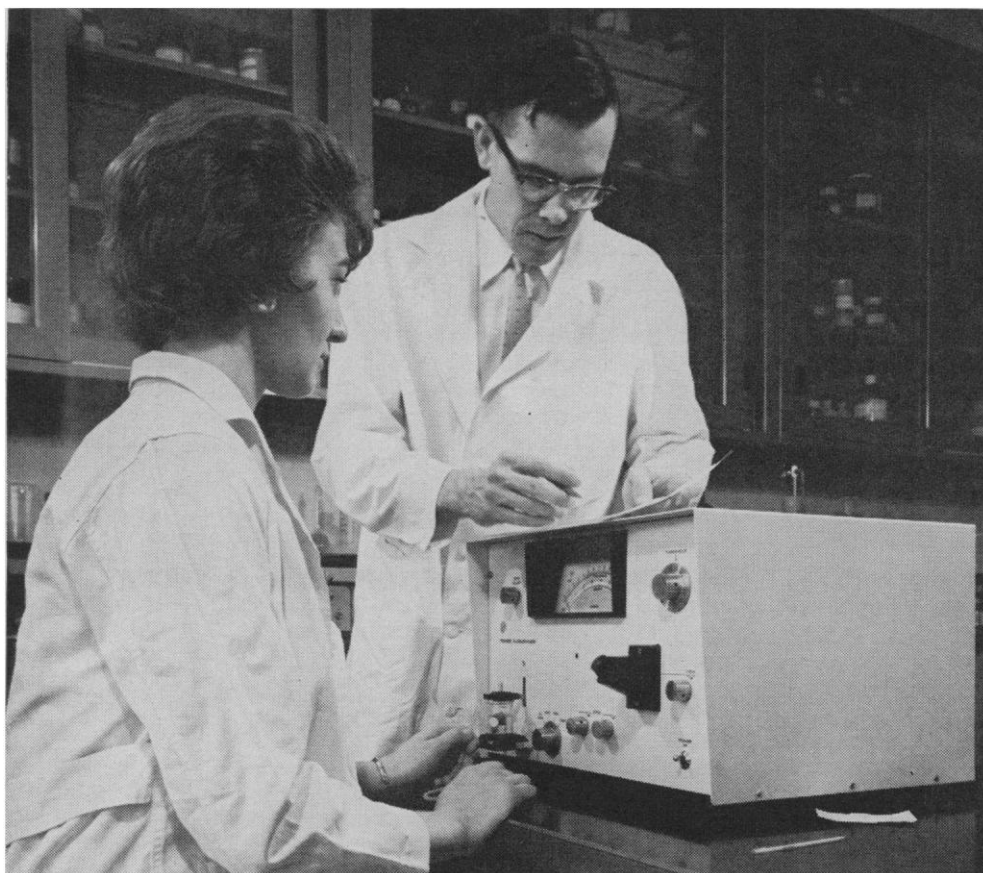
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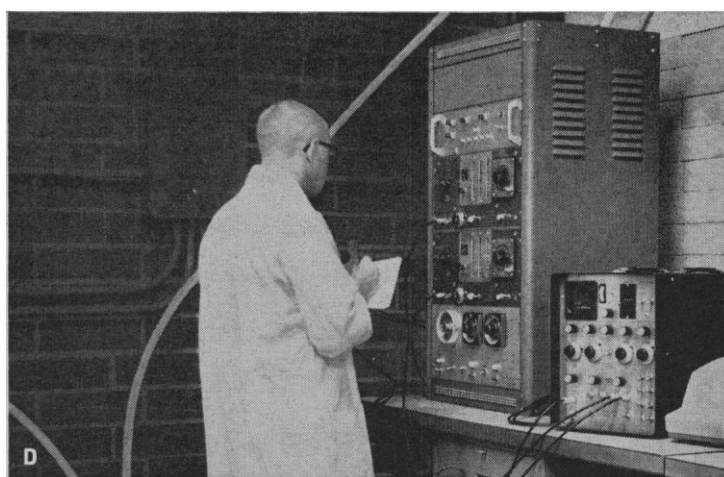
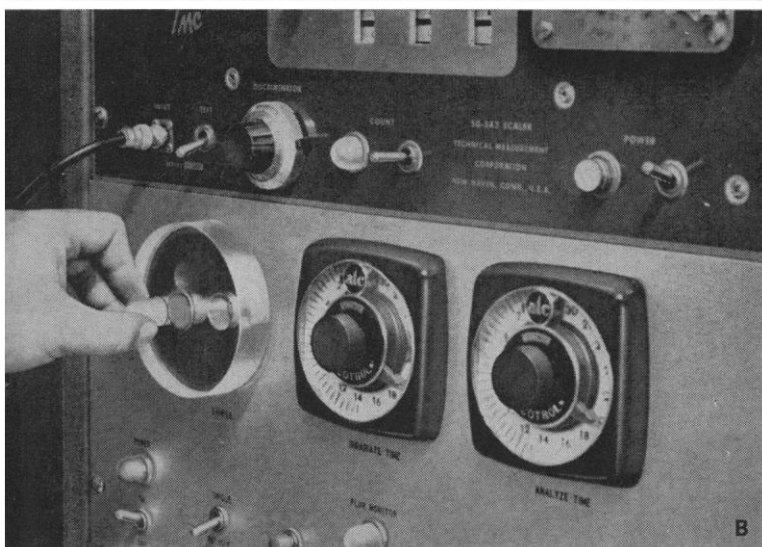
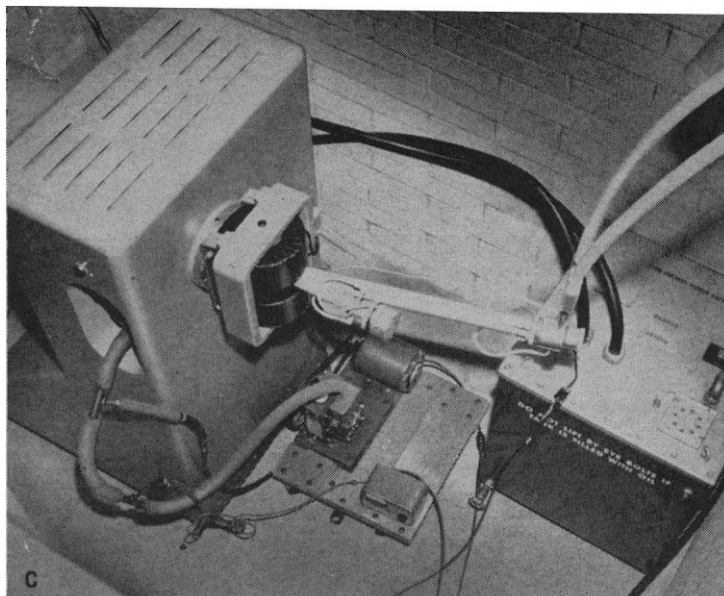
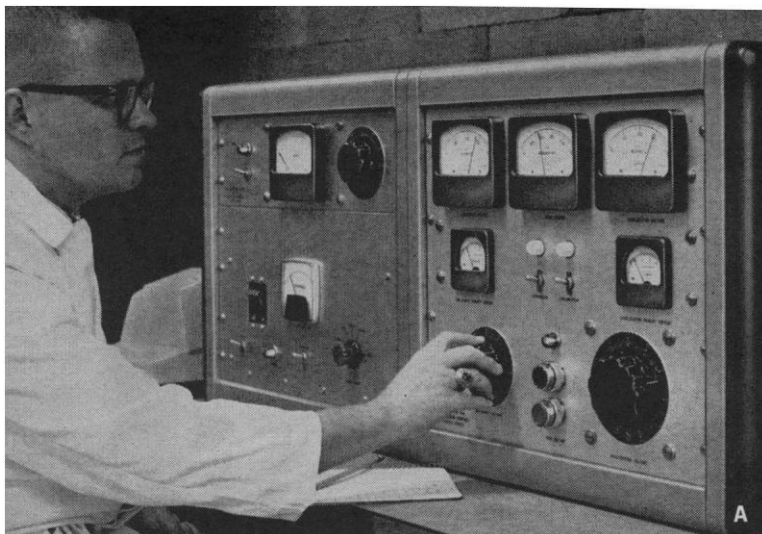
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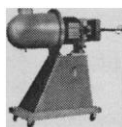
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The neutron generator—the Ellison Activatron 111— has a high atomic-to-molecular ratio Penning ion source with an ultra-stable 1 ma. beam current and a neutron yield of 10^{11} neutrons/sec., making it equal to virtually every sample activation requirement. Safety of the operator is increased by the total immersion of the high voltage supply, accelerator section and ion source in oil baths. This also provides cooling of these units. The target is cooled by an in-

tegral recirculating water system. *Activatron control units* may be housed in individual cabinets, in a desk-type console, or they may be mounted with other equipment in custom cabinets.



The Sample Transfer System (single and dual units available) is completely automatic. The sample "rabbit" is inserted in the receptacle on the control unit and transferred by compressed air to the Activatron target holder. After irradiation, the sample is automatically transferred to a scintillation detector for a preset counting period. The complete system includes the control unit, irradiate and counting stations, conveyor tubing and compressor.

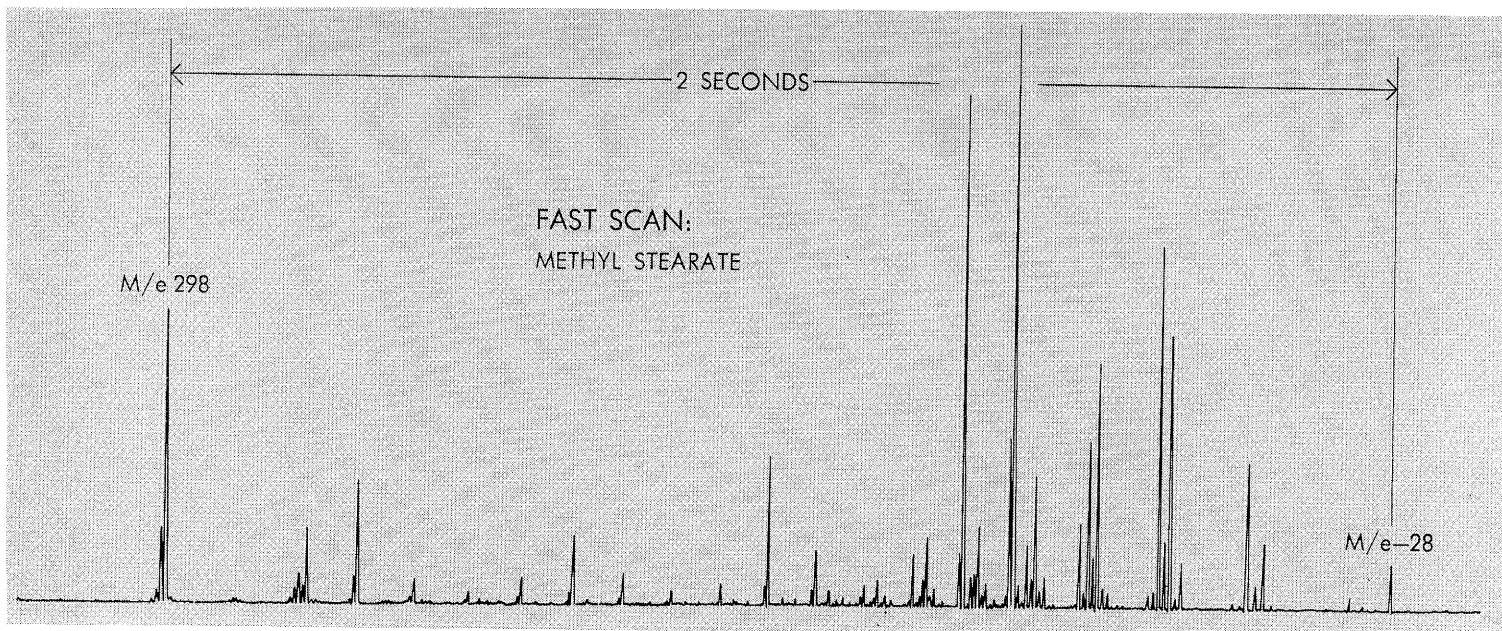
The Pulse Height Analysis Systems — the 100-channel Gammascope and the 400-channel 400 Series offer the choice of an economical, single input system or a more

versatile, higher capacity system. The Gammascope provides one input, a variable single-channel "window" selector, built-in CRT display and a digital tape printer. The 400 Series has two independent detector inputs, memory sub-grouping and multi-scaling capabilities, built-in CRT display and a wide selection of accessory units for data reduction and readout.

TMC activation analysis systems are backed by broad experience in designing, building, installing and servicing equipment tailored to meet the precise needs of many laboratories. For complete information on a system for your requirements, contact any TMC office or write Technical Measurement Corporation, Ellison Division, 441 Washington Avenue, North Haven, Connecticut:



TECHNICAL MEASUREMENT CORPORATION



ANNOUNCING THE NEW RMU-6D—THE ONLY MASS SPECTROMETER WITH EVERY IMPORTANT FEATURE

Clearly, the present day need in Mass Spectrometry is for maximum versatility. In G. C. component identification scan speed and sensitivity are premium requirements; in structural analysis separation of unit masses over a wide mass range is essential; in precision molecular weight determination high resolution is necessary. But few laboratories can afford to purchase several mass spectrometers emphasizing separate capabilities. The new Hitachi Perkin-Elmer RMU-6D Mass Spectrometer offers the widest range of performance features available in any one instrument. It is a workhorse instrument designed for ease of operation and reliability, backed by the skilled Perkin-Elmer service organization. **Wide Mass Range Magnetic Scanning** allows high molecular weight samples to be analyzed (m/e 1—1500). **High Resolution and Accuracy** allows detailed spectral interpretation of indi-

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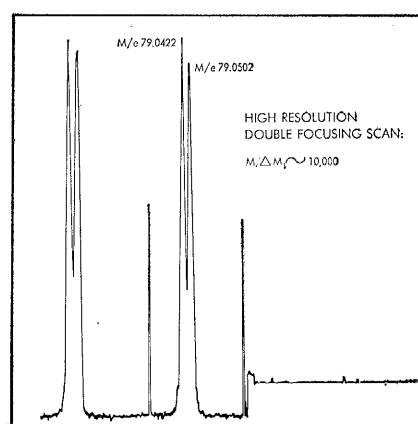
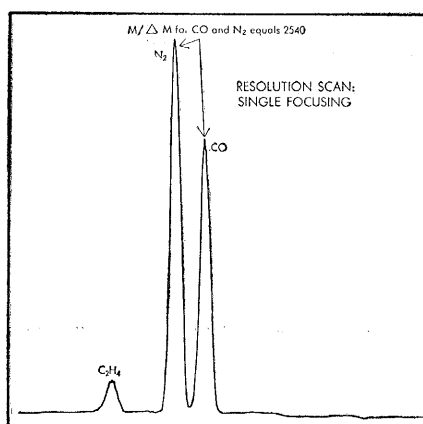
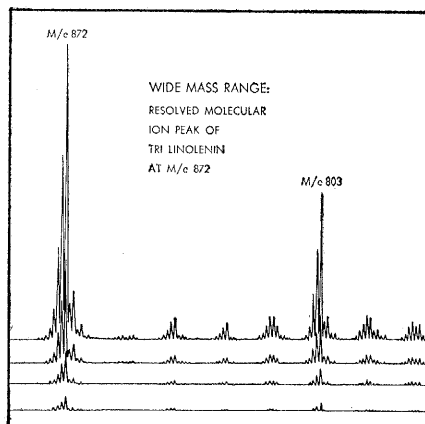
Gas Chromatography Connection Accessory with efficient all glass Helium Separator allows spectral analysis of trace components separated by capillary or packed G.L.C. columns.

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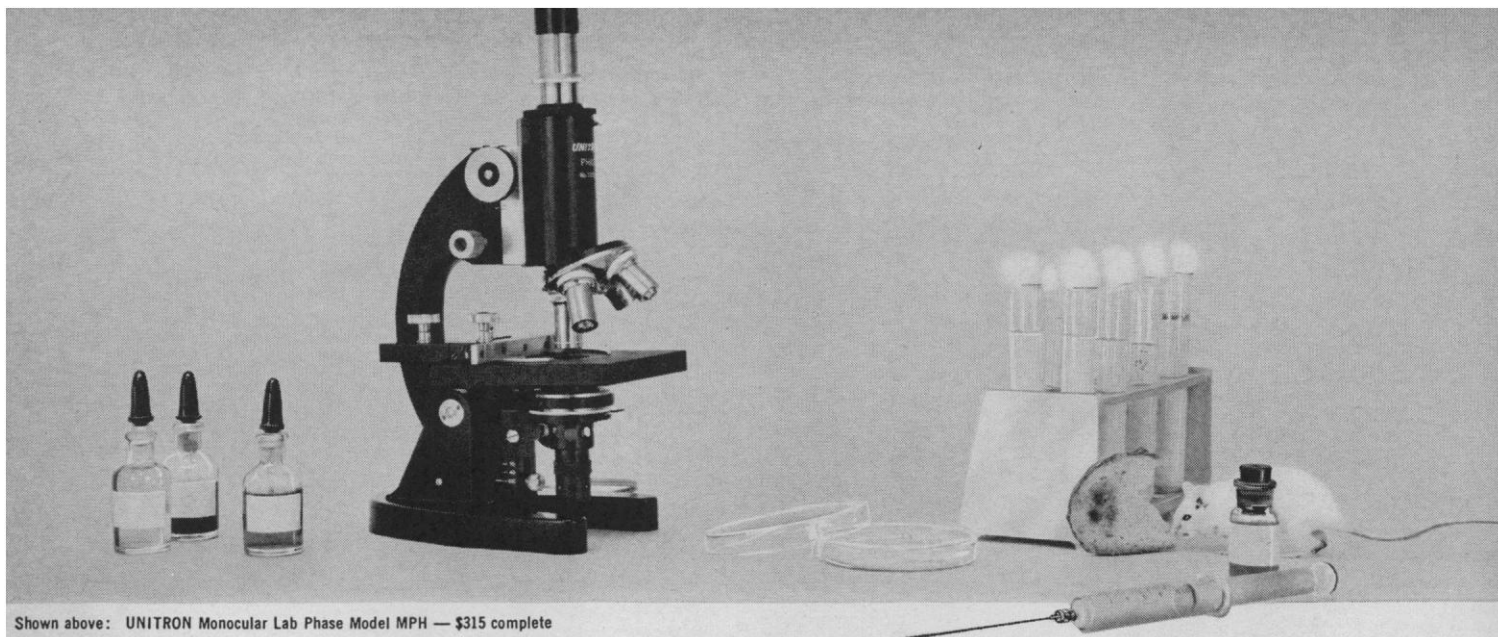
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Shown above: UNITRON Monocular Lab Phase Model MPH — \$315 complete

There are 3 microscopes in this picture ...at a distinctly singular UNITRON price

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So is UNITRON's MPH.

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Still other lab microscopes offer *phase contrast* to aid in the study of *living, unstained* material.

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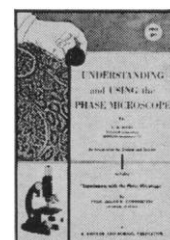
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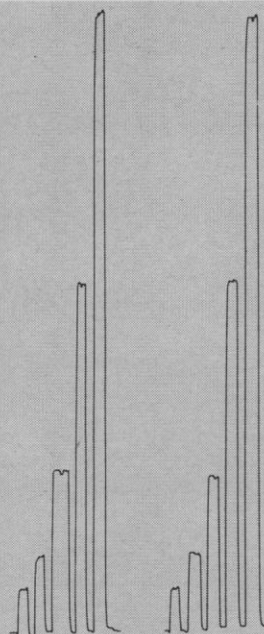
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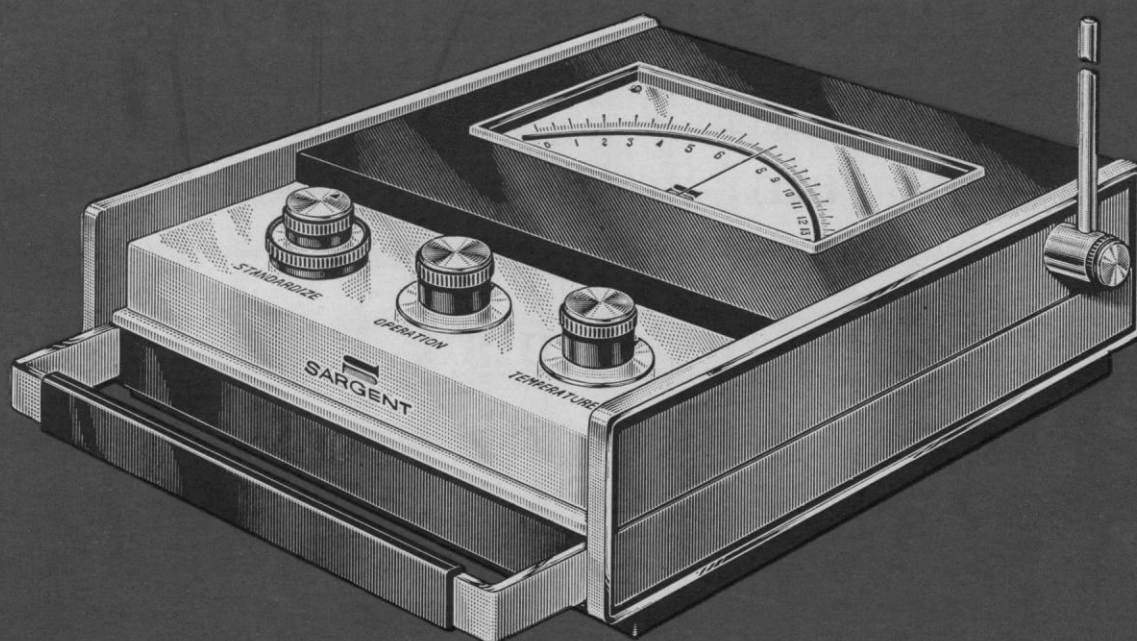
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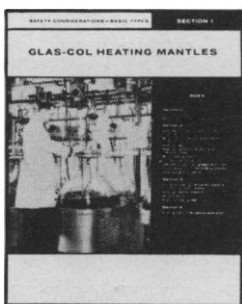
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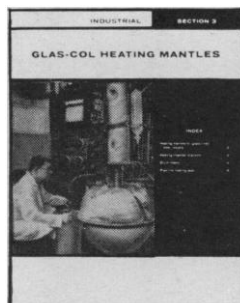
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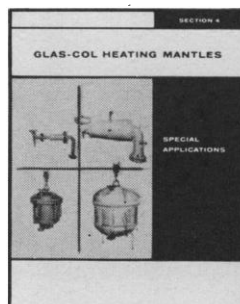
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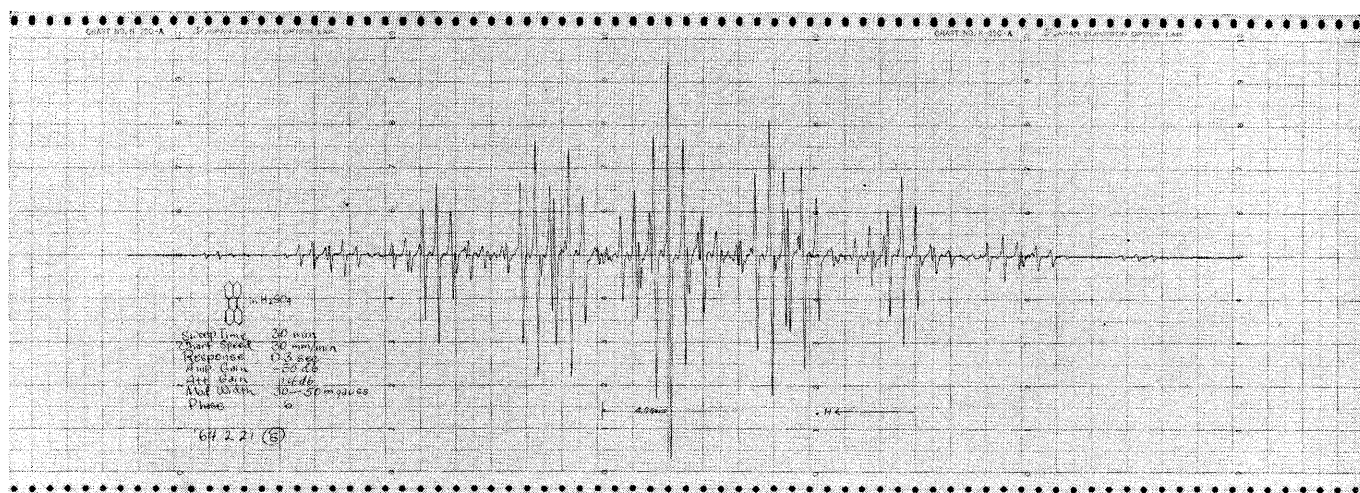
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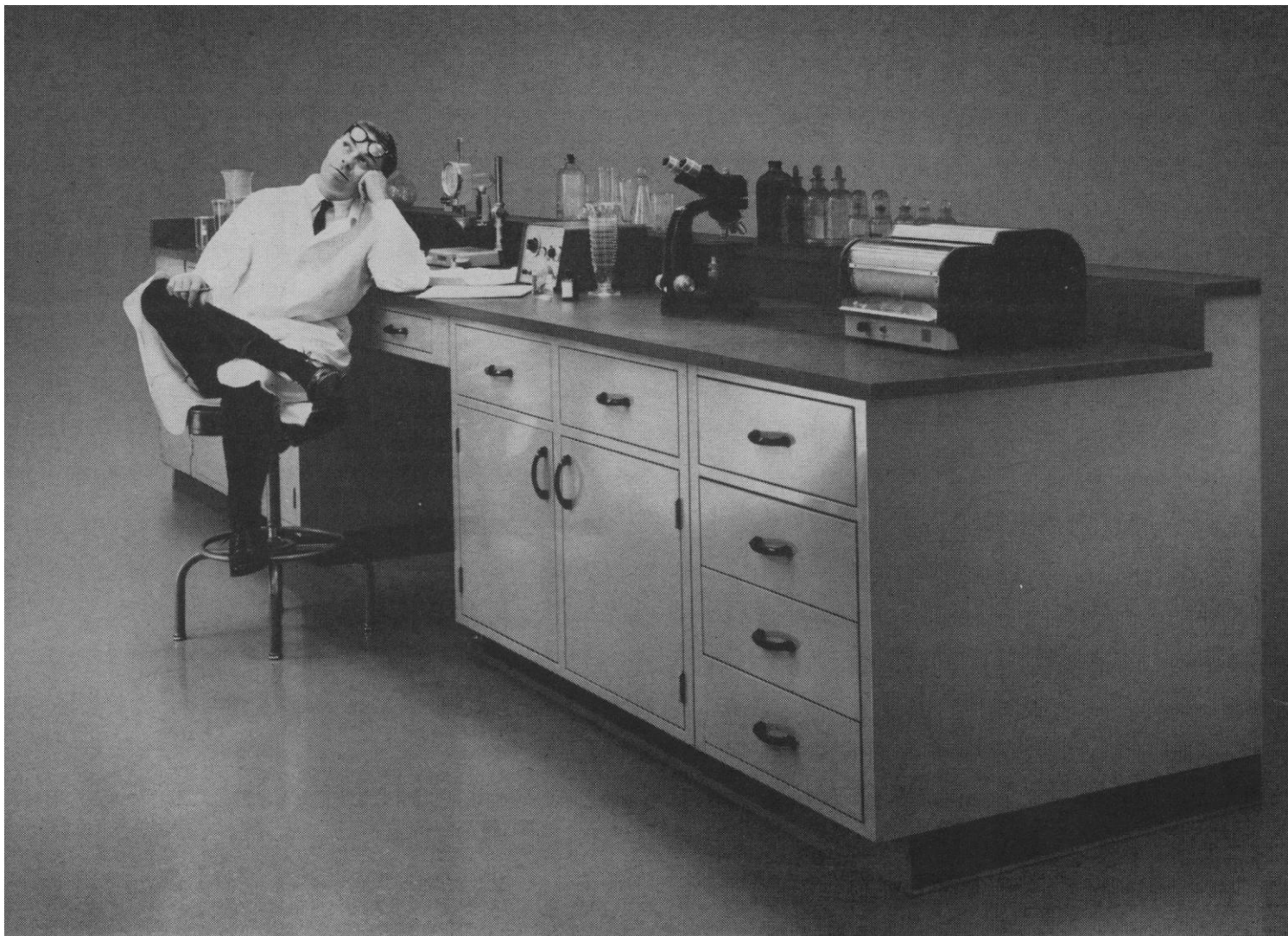


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							WIDTH	INCHES HEIGHT	DEPTH	INCHES HEIGHT	WEIGHT (LBS.)
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QRB20-1.5	0-20	0-1.5	±(0.01% + 1mv)	0.15mv	50	±0.015	8¼	5½	9	5¼	10.75
QRB30-1	0-30	0-1	±(0.01% + 1mv)	0.15mv	50	±0.015	8¼	5½	9	5¼	10.75
QRB40-.75	0-40	0-.75	±(0.01% + 1mv)	0.15mv	50	±0.015	8¼	5½	9	5¼	10.75



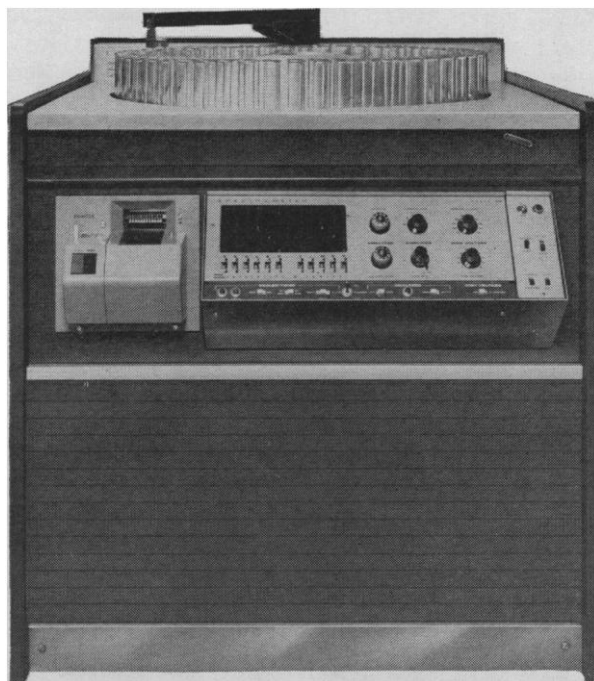
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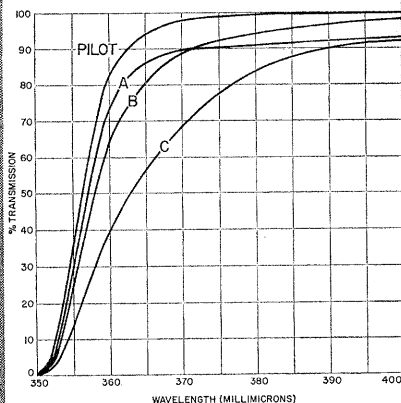
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shouldn't behave as though assumptions are facts, but add that neither is there justification for claiming that races are genetically equal until supported by firm evidence.

Montagu writes approvingly of conception control for all who, either because of genetic limitations or because of poor cultural heritage, are unable to endow children with a reasonable chance to achieve happiness, self-sufficiency, and good citizenship. Montagu and I could quibble over several points, but our only serious disagreement is on his position that the question of race and intelligence is untestable and unimportant. I am glad to see him acknowledge that heredity plays a role in intelligence. Many social scientists teach that intellect is entirely or almost entirely the product of environment and, hence, are unworried about high birth rates among the incompetent.

Rabin, seemingly unworried about the threat of overpopulation, recoils from the recommendations on conception control as being ruthless and inept. He recommends that we not attend to bad culture and behavior, for they are matters of private judgment.

I thank Paula Giese for documenting my claim that such views as hers are held. Here is an expression of doubt that there is a genetic basis for intelligence and a characterization of the proposal that the problem be studied as a mischievous suggestion. She implies that private enterprise should not have a role in upgrading genetic and cultural heritage. The success of integration in the Hyde Park-Kenwood community was achieved largely by private organizations. The integrated housing of Lake Meadows and Prairie Shores and many others was built by private funds. On the national scene, the NAACP, the Urban League, religious organizations, and so on are private enterprises supported by private funds which have facilitated the advancement of the underprivileged.

Fischer doubts that any scientist has proposed that members of another race have an average innate ability superior to those of his race. I am among the non-Jews who consider it probable that superior intelligence and genius occur more frequently among Jews, until recently a disadvantaged people. Jews are less a "race" than Negroes, but races are not randomly represented in this minority group. Fischer imagines that I propose eugenic measures which would select only for intelligence. There are many other important qualities of

physique and intellect. I have never proposed a basis for selection.

Fischer and Deakin disagree with my doubts about encouraging interracial marriage. Many integrationists claim that it is not an issue. It is a real and highly sensitive issue, for interbreeding is being encouraged as a means of resolving racial problems. What is wrong with an interracial marriage between culturally and intellectually compatible Negroes and whites? Too little is known of the biological consequences. The question of race and intelligence is unsettled. Less is known of the inheritance of various drives and behavior traits and their relationship to race. We look in vain for a country which is governed wisely by Negroes. Racial mixing cannot be undone. Let's facilitate Negro advancement by full civil rights and equal opportunity, reward and honor their achievements, prevent human misery of every race, but without accepting the social scientist's assurance that the biological experiment of interbreeding can be done without risk to civilization.

Parton complains of my reference to the unpublished studies of Strodbeck. These careful, extensive, and highly significant studies will be published. Strodbeck has kindly given me detailed reports on completed but unpublished phases of the research. I did not, as Parton claims, accept the conclusions of Shuey, but simply mentioned that Shuey and Anastasi had reviewed much the same subject and had reached widely different conclusions.

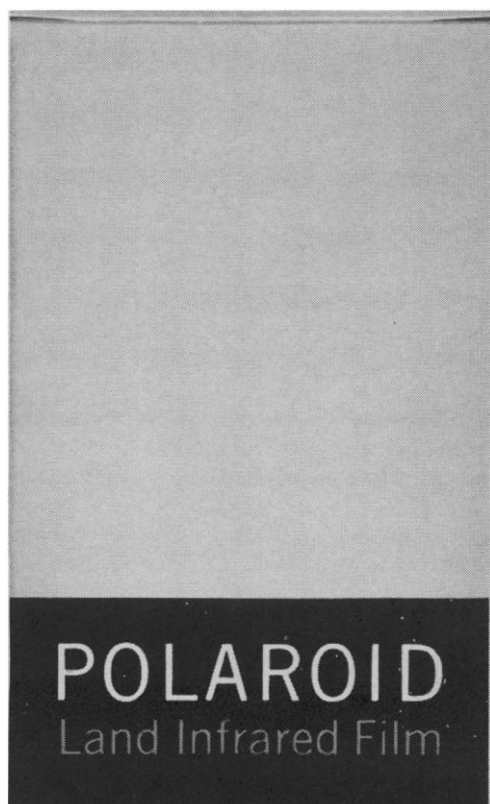
Each point made by Snow and Seibert was anticipated in my article. In regard to studies on identical twins, I said that "the same studies also demonstrate the importance of environment." I wrote only of a genetic basis for intelligence and made no claim that intelligence is fixed and have never imagined that there is a unitary ability to learn or reason.

I have a final word on the right of the scientist to dissent against attempts to close systems of knowledge. In science we demand validation of each claim to knowledge by rigorous and critical tests of evidence. Positive claims are not final until there is proof that all alternative propositions are untenable. Science does not abdicate to authority or the tyranny of dogma—nor does it try to shape truth by aims and value judgments.

DWIGHT J. INGLE

Department of Physiology, University of Chicago, Chicago 31, Illinois

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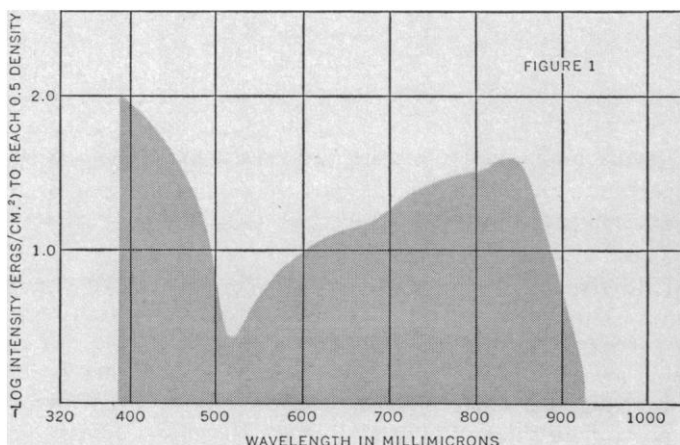
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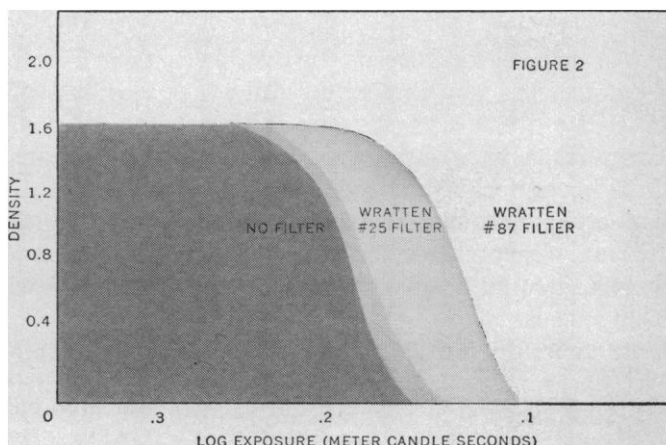
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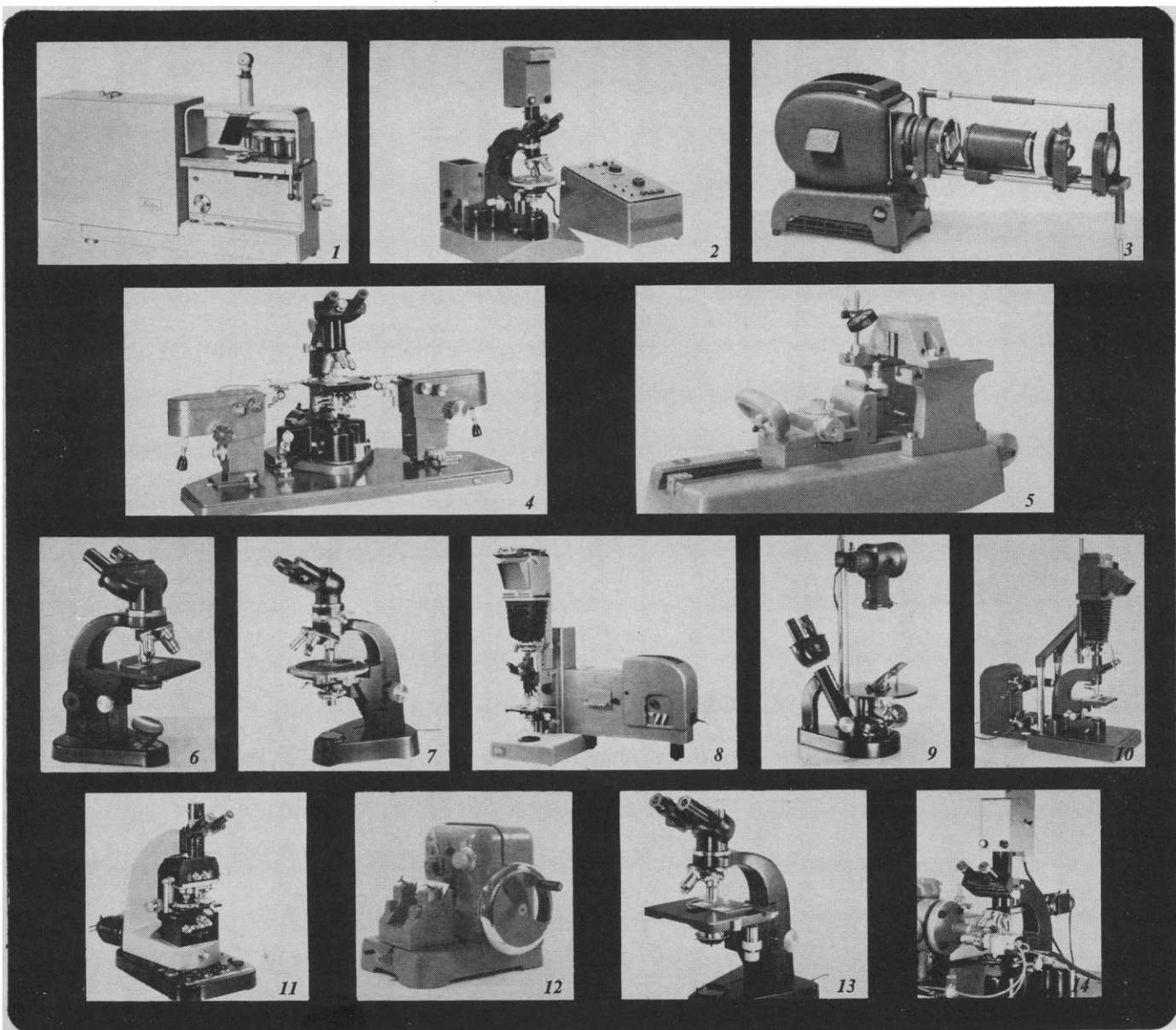
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SPECTRAL SENSITIVITY. This graph illustrates the spectral response of Type 413 film.



CHARACTERISTIC CURVES. This graph illustrates average H & D characteristics of Type 413 film. (Tungsten light source, 3000°K.)





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Desalination of Water

There is world-wide interest in means for obtaining more fresh water. President Johnson recently indicated his views, in part, by quoting a statement made by President Kennedy: "There is no scientific breakthrough, including the trip to the moon, that will mean more to the country which first is able to bring fresh water from salt water at a competitive rate. . . ."

Much of the U.S. effort aimed at desalination of water has been conducted under the Office of Saline Water of the Department of the Interior. The OSW has sponsored some imaginative work—for example, development of a reverse osmosis process. Given a membrane permeable only by water, it is possible to obtain fresh water from sea water by exerting a differential pressure of about 24 atmospheres on salt water. In turn, it is theoretically possible to obtain a cubic meter of fresh water from sea water by the expenditure of about 0.7 kilowatt-hours of energy, the minimum amount for a reversible process. The present cellulose acetate membranes, however, are not perfect. A pressure of 100 atmospheres is required to produce water at the rate of 370 liters per square meter of membrane surface per day. The effluent, while potable, is not entirely free from salt. The membranes have only a few weeks of service life.

Another process involves formation of clathrate compounds. If propane, under pressure of 3 atmospheres, is bubbled into sea water at about 6.5°C above the freezing point, a light solid composed of 17 molecules of water to one molecule of propane is formed. Salt is excluded. The solid can be removed and the water readily obtained. In a practical process, energy consumption might amount to between 3.5 and 12 kw-hr per cubic meter of water.

Another method, which may be used practically, is freezing. It is attractive because the latent heat is small, and low-temperature processes are relatively free from corrosion problems. Energy cost for a practical freezing scheme has been estimated at 12 kw-hr/m³.

Without heat exchange, the energy requirement for distilled water is about 700 kw-hr/m³. With heat exchange this figure has been reduced to 70 kw-hr/m³ in "demonstration plants," and it could be reduced to somewhat lower values through greater investment for equipment. The price of obtaining fresh water from sea water is heavily dependent on the cost of energy. Recently it has been pointed out that very large nuclear reactors could be particularly efficient. In situations where a dual-purpose electricity and water plant are feasible, costs for distilled water have been estimated at about 6 cents per cubic meter. (Costs of raw fresh water in coastal regions of the United States range from about 0.1 to about 6.0 cents per cubic meter.) In high-cost areas such as southern California, some of the needs probably could be met by desalination through distillation. In the eastern half of the nation, where total supplies are adequate and cheap, better utilization of natural supplies is the practical solution.

It is to be hoped that a balanced approach will be made to the water problem. Adequate emphasis should be given to research and to development, particularly of promising new processes. At the same time it should be remembered that most of this nation's water problems will be solved by wise use of what is naturally available.

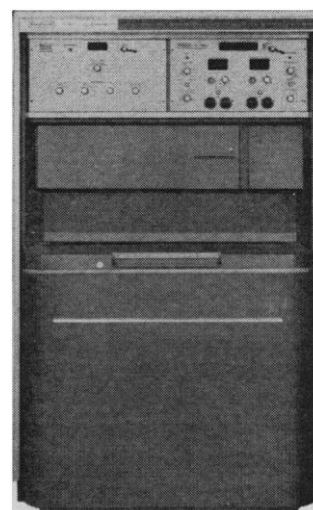
—PHILIP H. ABELSON

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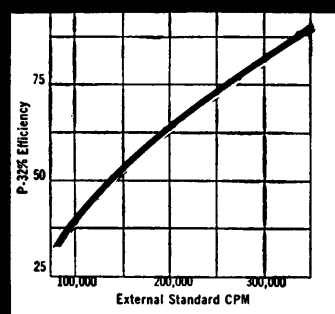
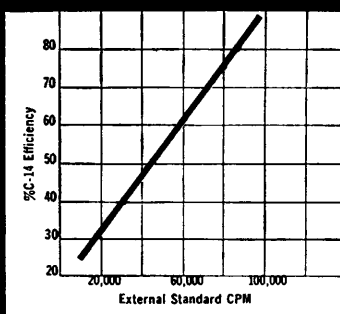
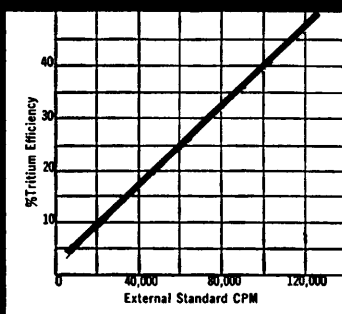
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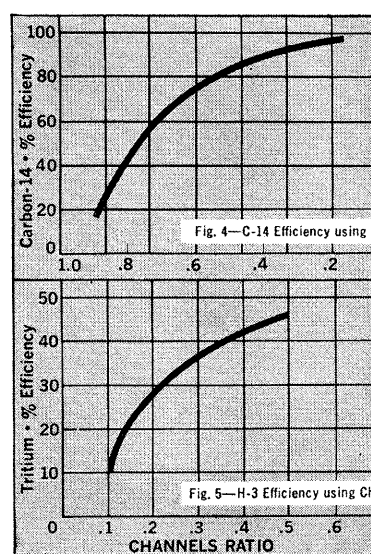


Fig. 4—C-14 Efficiency using Channels Ratio

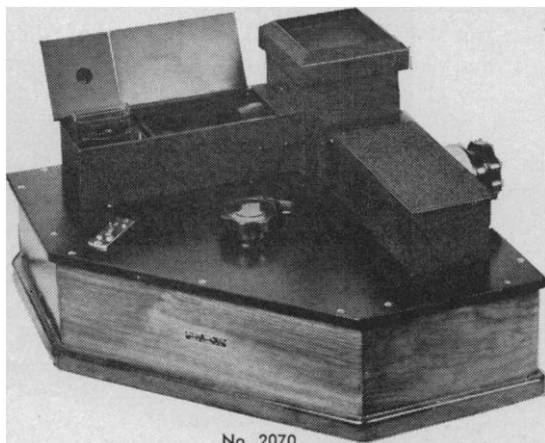
Fig. 5—H-3 Efficiency using Channels Ratio



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proval of pursuit of these new programs will permit a continuation of the excellent start made in this conference. It is now expected that a year's time will show improvement in undergraduate training in optics and increased pressure on undergraduates to continue for graduate research.

The task leaders will publish status reports for these programs in the Society's journals as various objectives are accomplished.

Aden B. Meinel is starting a graduate program at the University of Arizona which, in cooperation with the departments of mathematics, physics, and engineering, will turn out personnel experienced in optics. His talk was concerned with the premises and philosophy behind the effort rather than with the program itself.

As studies have shown, industry—through neglect on the part of the universities—has assumed the principal role in training its specialists in optics (approximately one percent of physics graduate students are doing research in optics, yet 8 to 10 percent of all employed physicists are working in optics). It is certainly true (as a consequence?) that industry, and not the university, gets the greatest share of government support for basic research in optics. This is felt not to be the best relationship that could exist between university and industry in the research area. The reversal and restoration of proper responsibilities will require understanding and cooperation among universities, industry, and government. Meinel outlined four basic steps which must be taken in order to restore the university's role:

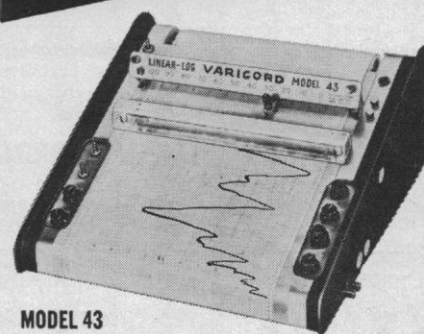
1) The university must provide the leadership to recruit a core faculty from industry.

2) The university must obtain from private and public sources a commitment for basic support over a period of several years which would provide for a liberal growth rate.

3) Money must be provided for construction of the physical plants required. This is a major hurdle, since such plants do not now exist in universities and a program cannot succeed on too little too late.

4) There must be funding of a number of research projects with specific objectives which, when combined with the funds which should be made available to institutions, will provide the means of engaging in advanced research. Some of this support for specific projects will be of the type that

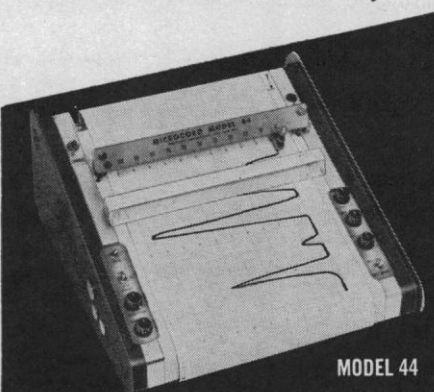
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industry is now receiving. In return, the university should not undertake more projects than are needed to further its prime objective, the training of personnel in optics.

There followed a fairly lively discussion of all facets of the "optics problem." However, compared to the somewhat bitter symposium at the annual meeting just 2 years ago, there is evidence of increasing understanding on the part of the members of what is occurring.

Optics is no longer an active discipline of physics. Neither is heat, sound, or mechanics. However, optical techniques are major tools of all branches of physics, and therefore physicists must themselves provide or find some means of obtaining personnel competent in optics.

Engineers must recognize that much of the resurgent need in optics is in the field of optical engineering, in which new components and systems for space reconnaissance, surveillance, and information processing are required. Engineers, like physicists, have a great need for competent workers in optics.

The pervasive influence of optics on physics, engineering, biology, and physiology may result in programs similar to Meinel's in which a graduate facility works with all departments.

Optics is an excellent area of research to be entered into by faculty members in small colleges, because the cost of equipment is often less than in other fields. It is still difficult for such faculty members to get requests for grants appreciated by granting agencies. However, there is evidence of increasing interest in optics by the Department of Defense; there is evidence that the small-college teacher can make his needs understood; and there is evidence that optics education is enlarging.

The meeting adjourned with a more optimistic outlook than prevailed 2 years ago.

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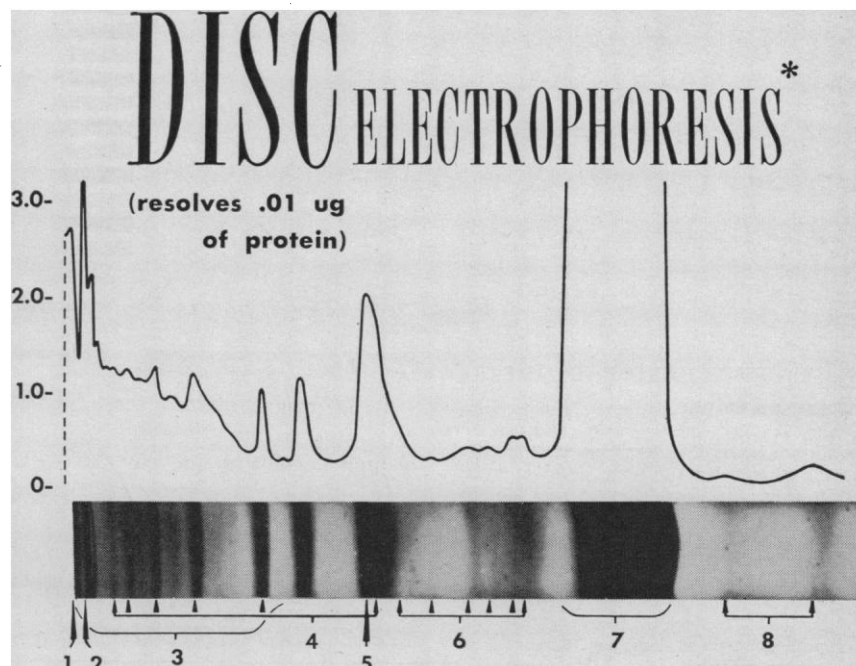
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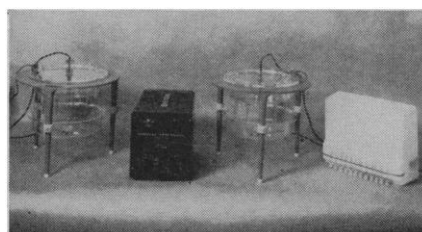


Proteins of a 3. ul sample of human serum (haptoglobin type 2-1, no free hemoglobin or hemoglobin-haptoglobin complexes): (1) slow beta 1 lipoprotein; (2) slow alpha 2 macroglobulin; (3) region of "7S" gamma globulins; (4) haptoglobins; (5) transferrin; (6) post-albumins; (7) albumin; (8) pre-albumins. Optical density traced by CANALCO Model E Microdensitometer.

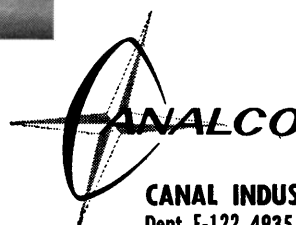
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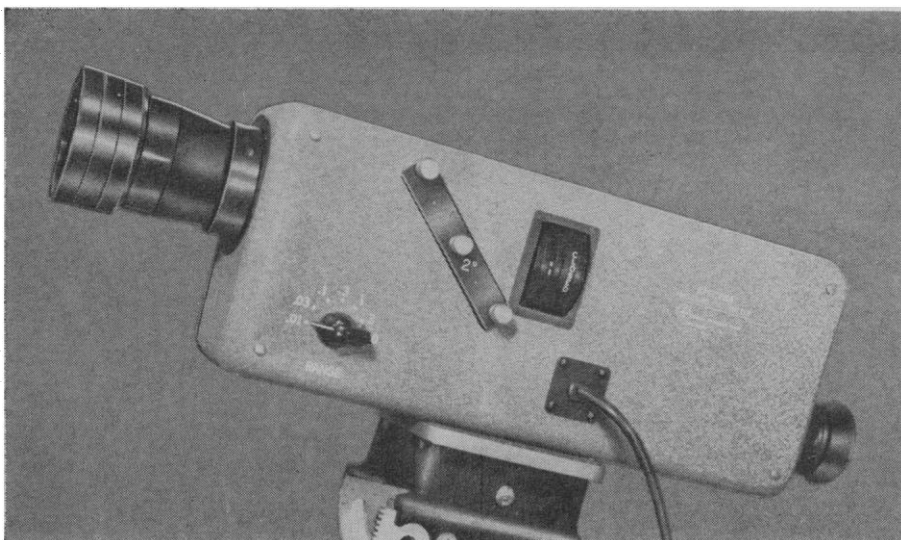
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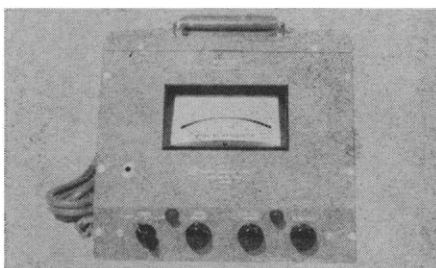
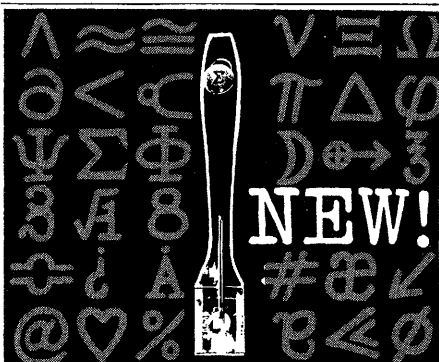


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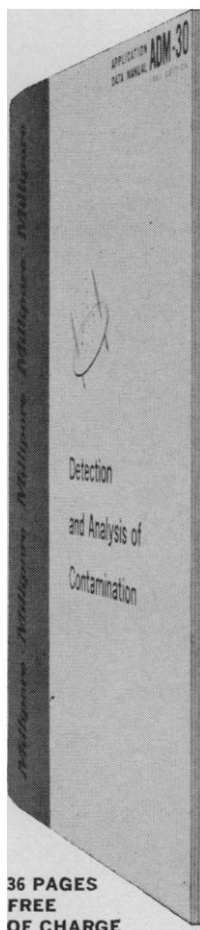
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28-30. **American Geophysical Union**, Seattle, Wash. (W. W. Kellogg, Rand Corp., 1700 Main St., Santa Monica, Calif.)

28-30. **Linguistic Soc. of America**, New York, N.Y. (A. A. Hill, Post Office Box 8120, University Station, Austin, Tex.)

28-30. **Western Soc. of Naturalists**, Univ. of Washington, Seattle. (I. A. Abbott, Hopkins Marine Station of Stanford Univ., Pacific Grove, Calif.)

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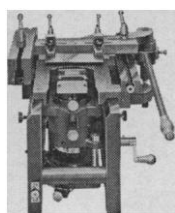


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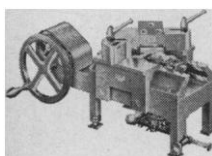
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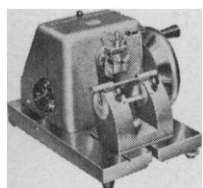
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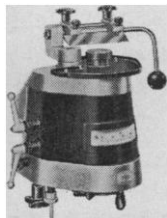
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6-8. **Industrial Electronics and Control Instrumentation**, 13th annual conf., Philadelphia, Pa. (E. Weiss, Sun Oil Co., Marcus Hook, Pa.)

6-9. **Psychopharmacological Conf.**, Czechoslovak Medical Soc., Psychiatry Section, Jesenik Spa. (M. Vojtechovsky, Budejovicka 800, Pavilion A1, Prague, Czechoslovakia)

8-9. **Orthopaedic Research Society**, New York, N.Y. (R. A. Calandrucio, 869 Madison Ave., Memphis, Tenn.)

9-14. **American Acad. of Orthopedic Surgeons**, annual, New York, N.Y. (H. K. Hart, AAOS, 29 E. Madison, Chicago 2, Ill.)

10-16. **The New Science**, symp., Colorado Springs, Colo. (F. A. Sondermann, Colorado College, Colorado Springs)

11-14. **Civilian and Military Uses of Aerospace**, conf., New York, N.Y. (I. B. Laskowitz, New York Acad. of Sciences, 2 E. 63 St., New York)

12-14. **Reliability and Quality Control**, symp., Miami, Fla. (H. D. Hulme, Westinghouse R&D Center, Bldg. 601-1346, Churchill Boro, Pittsburgh, Pa.)

12-15. **Crustacea**, symp., Cochin, India. (Marine Biological Assoc. of India, Marine Fisheries P.O., Mandapam Camp, S. India)

14. **American Genetic Assoc.**, Washington, D.C. (W. R. Singleton, Biology Bldg., Univ. of Virginia, Charlottesville)

18-20. **Solar Radiation Simulation**, intern. conf., Los Angeles, Calif. (H. F. Sander, Inst. of Environmental Science, 34 S. Main St., Mount Prospect, Ill.)

19. **American Inst. of Mining, Metallurgical, and Petroleum Engineers**, Metallurgical Soc., 7th mechanical working conf., Pittsburgh, Pa. (R. W. Shearman, Secretary, Metallurgical Soc. of AIME, 345 E. 47 St., New York 10017)

19. **Cor Pulmonale**, New York Heart Assoc., New York, N.Y. (NYHA, 10 Columbus Circle, New York 10019)

19-20. **Die Design and Press Tooling Conf.**, American Soc. of Tool and Manufacturing Engineers, Hartford, Conn. (M. Zapico, Asst. Conf. Director, ASTM, 10700 Puritan Ave., Detroit 38, Mich.)

20-22. **Instrumentation**, College Station, Tex. (P. T. Eubank, Chemical Engineering Dept., Texas A&M Univ., College Station)

20-23. **National Soc. of Professional Engineers**, New Orleans, La. (P. H. Robbins, 2029 K St., NW, Washington, D.C.)

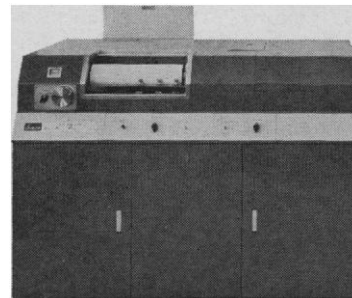
22. **Bibliographical Soc. of America**, New York, N.Y. (Mrs. H. C. Ralph, P.O. Box 397, Grand Central Station, New York 10017)

22-1. **Earthquake Engineering**, 3rd world conf., Auckland and Wellington, New Zealand. (Administrative Secretary, Third World Conf. on Earthquake Engineering, P.O. Box 5180, Wellington)

22-23. **Blood**, annual symp., Detroit, Mich. (W. H. Seegers, Dept. of Physiology and Pharmacology, Wayne State Univ. College of Medicine, Detroit)

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25-26. **Viruses of Laboratory Rodents**, symp., Atlanta, Ga. (R. Holdenried, Natl. Cancer Inst., NIH, Bethesda, Md. 20014)

25-27. **American Inst. of Aeronautics and Astronautics**, New York, N.Y. (J. Bidwell, AIAA, 1290 Avenue of the Americas, New York 10019)

25-28. **American Meteorological Soc.**, annual, New York, N.Y. (K. Spengler, AMS, 45 Beacon St., Boston 8, Mass.)

25-28. **American Society of Heating, Refrigerating and Air-Conditioning Engineers**, Chicago, Ill. (R. C. Cross, 345 E. 47 St., New York 10017)

25-28. **Modern Methods of Analytical Chemistry**, 18th annual intern. symp., Baton Rouge, La. (P. W. West, Dept. of Chemistry, Louisiana State Univ., Baton Rouge)

25-28. **Cardiovascular Diseases**, 2nd natl. conf., Washington, D.C. (C. H. Maxwell, 9650 Wisconsin Ave., NW, Washington, D.C. 20014)

25-29. **American Mathematical Soc.**, Denver, Colo. (G. L. Walker, AMS, 190 Hope St., Providence, R.I.)

25-29. **American Soc. for Testing and Materials**, steel meeting, Mexico City, Mexico. (H. H. Hamilton, Public Relations, ASTM, 1916 Race St., Philadelphia, Pa. 19103)

25-30. **American Library Assoc.**, Washington, D.C. (D. H. Clift, ALA, 50, E. Huron St., Chicago, Ill.)

26. **Quasi Stellar Radio Sources**, American Inst. of Physics, New York, N.Y. (E. H. Kone, AIP, 335 E. 45 St., New York)

26. **Mossbauer Effect Methodology**, symp., New York, N.Y. (M. Ress, New England Nuclear Corp., 575 Albany St., Boston, Mass.)

26-29. **Canadian Pulp and Paper Assoc.**, technical, annual, Montreal. (Miss J. M. McKenzie, CPPA, Technical Section, 2280 Sun Life Bldg., Montreal 2)

27-30. **American Group Psychotherapy Assoc.**, annual, San Francisco, Calif. (AGPA, Inc., 1790 Broadway, Room 516, New York, N.Y. 10019)

27-30. **American Physical Soc.**, New York, N.Y. (K. K. Darrow, Pupin Physics Laboratory, Columbia Univ., New York)

27-30. **Electrochemistry**, 5th seminar, Karaikudi-3, South India. (M. A. V. Devanathan, Central Electrochemical Research Institute, Karaikudi-3)

27-30. **Geological Soc.**, Southwestern Federation, Austin, Tex. (S. P. Ellison, Jr., Department of Geology, Univ. of Texas, Austin)

27-31. **Neurosurgical Soc. of America**, San Juan, Puerto Rico. (C. H. Davis, Jr., Bowman Gray School of Medicine, Winston-Salem, N. C.)

28-29. **Interactions of Man and His Environment**, symp., Chicago, Ill. (W. K. Stuckey, Dept. of Public Relations, 1802 Chicago Ave., Northwestern Univ., Evanston, Ill. 60201)

28-29. **Rheology Soc.**, winter meeting, Santa Barbara, Calif. (R. S. Porter, California Research Corp., Richmond Laboratory, 576 Standard Ave., Richmond 94802)

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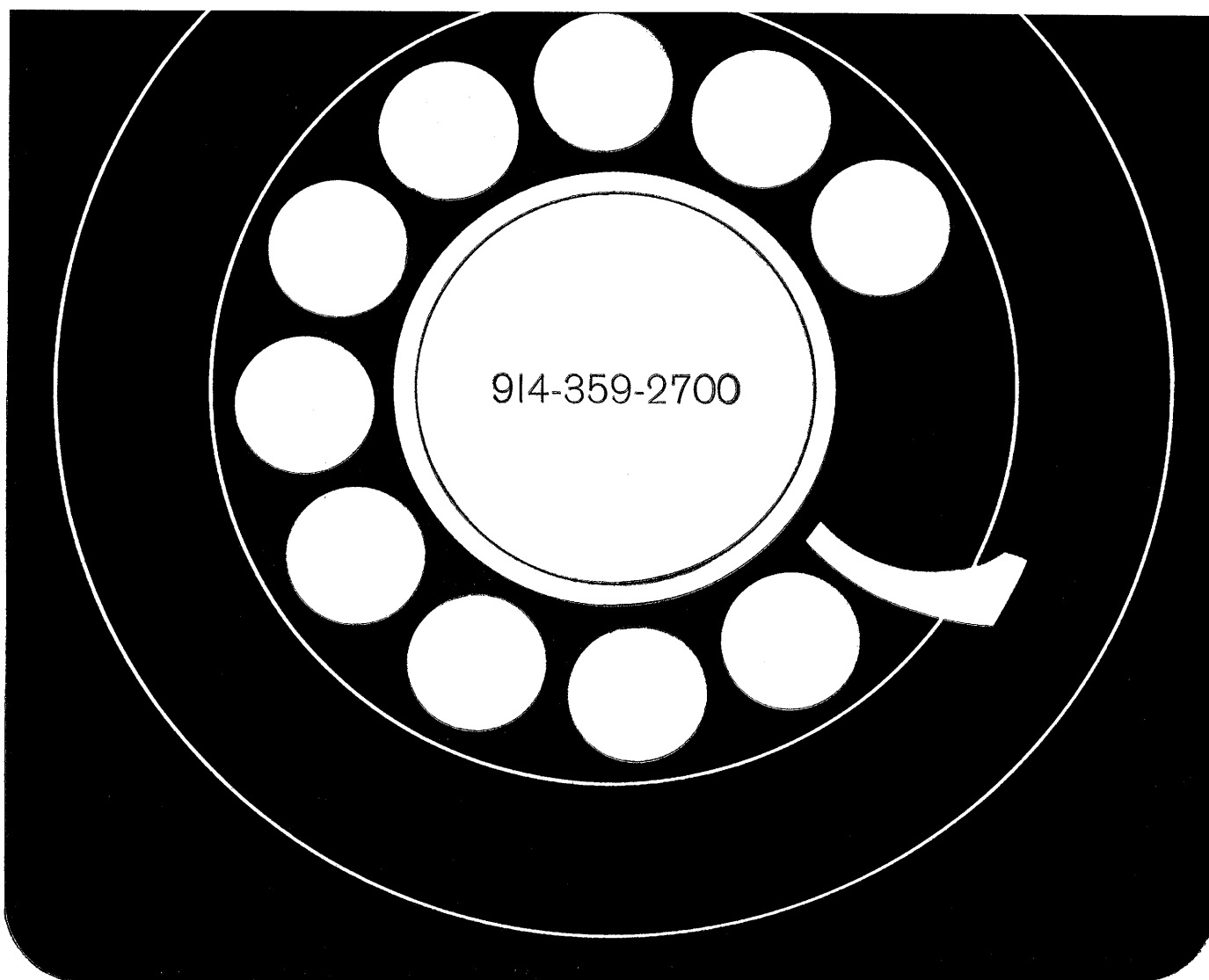
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Denis J. Prager (D.J.P.), Laboratory of Technical Development, National Heart Institute, Bethesda 14, Md. (medical electronics and biomedical laboratory equipment).

Joshua Stern (J.S.), Basic Instrumentation Section, National Bureau of Standards, Washington 25, D.C. (physics, computing, electronics, and nuclear equipment).

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The Laws and Applications of Thermodynamics. A. D. Buckingham. Pergamon, London; Macmillan, New York, 1964. 218 pp. Illus. Paper, \$3.75.

Linear Representations of the Lorentz Group. M. A. Naimark. Translated from the Russian edition (Moscow, 1958) by Ann Swinfen and O. J. Marstand. H. K. Farahat, Translation Ed. Pergamon, London; Macmillan, New York, 1964. 464 pp. Illus. \$14.50.

Manuel Pratique de Chromatographie en Phase Gazeuse. J. Buzon, N. Guichard, G. Guiochon, J. Lebbe, A. Prévot, J. Tranchant, and J. Serpinet. Masson, Paris, 1964. 235 pp. Illus. Paper, F. 36.

Marine Geology of the Gulf of California. A symposium (Mémor. No. 3). Tjeerd H. van Andel and George G. Shor, Jr., Eds. American Assoc. of Petroleum Geologists, Tulsa, Okla., 1964. 414 pp. Illus. Charts. \$12.50. Sixteen papers and three charts (in a separate pocket).

Massenspektrometrie. C. Brunnée and H. Voshage. Thieme, Munich, Germany, 1964. 328 pp. Illus. DM. 54.

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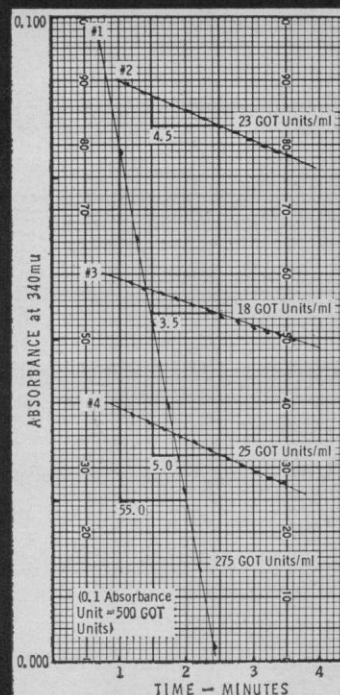


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Dissymmetries

Browsing through the 1964 crop of papers on light scattering, we have prepared, along the way, a short list of the systems that have been studied by means of Brice-Phoenix Light Scattering Photometers (LSP) and Differential Refractometers (DR). Here, then, are our findings based on a somewhat less than thorough search of the papers published during the first eight months of 1964.

DETERGENTS AND MICELLAR COLLOIDS

Phosphatidylserine (Abramson, Katzman and Gregor, *J. Biol. Chem.*, **239**, 70)—LSP
Sodium lauryl sulfate and dodecyltrimethylammonium bromide (Anacker, Rush and Johnson, *J. Phys. Chem.*, **68**, 81)—LSP, DR
Sodium 2,6-di-n-alkylnaphthalene-1-sulfonates (Heilweil, *J. Colloid Sci.*, **19**, 105)—LSP, DR
Dimethyldodecylamine oxide (Herrmann, *J. Phys. Chem.*, **68**, 1540)—LSP, DR
Sodium dodecyl benzene sulfonate-nonionics mixed micelles (Mankowich, *J. Am. Oil Chem. Soc.*, **41**, 449)—LSP

SYNTHETIC POLYMERS

Aromatic polysulfonates (Thomson and Ehlers, *J. Polymer Sci.*, **A2**, 1051)—LSP, DR
Poly-n-alkyl acrylates (Burlant, Hinsch and Taylor, *J. Polymer Sci.*, **A2**, 57)—LSP, DR
Polyhydroxy ether (Myers and Dagon, *J. Polymer Sci.*, **A2**, 2631)—LSP, DR
Nylon 66 (Elias and Schumacher, *Makromol. Chem.*, **76**, 23; Saunders, *J. Polymer Sci.*, **A2**, 3755, 3765)—LSP, DR
Styrene-methyl methacrylate block copolymer (Krause, *J. Phys. Chem.*, **68**, 1948)—LSP, DR
Polymers of higher olefins (Flowers, Hewett and Mullineaux, *J. Polymer Sci.*, **A2**, 2305)—LSP
Polyisobutene (Turner, *J. Phys. Chem.*, **68**, 1255)—LSP
Polystyrene (Graessley, *J. Phys. Chem.*, **68**, 2258; Spitsbergen and Beachell, *J. Polymer Sci.*, **A2**, 1205)—LSP
Polymethyl methacrylate (Krause and Cohn-Ginsberg, *J. Polymer Sci.*, **A2**, 1393)—LSP
Styrene-acrylonitrile copolymer (Shimura, Mita and Kambe, *J. Polymer Sci.*, **B2**, 403)—LSP
Polyethylene and polystyrene (Ehl, Loucheux, Reiss and Benoit, *Makromol. Chem.*, **75**, 35)—DR
Polyethylene (Drott and Mendelson, *J. Polymer Sci.*, **B2**, 187)—DR
Polyvinylpyrrolidone (Schnabel, *Makromol. Chem.*, **77**, 51)—DR
Polydimethylsiloxane (Crescenzi and Flory, *J. Am. Chem. Soc.*, **86**, 141)—DR
Poly-p-chlorostyrene (Greber, Tölle and Burchard, *Makromolekul. Chem.*, **71**, 47)—DR
Copolymers (Gallot, Franta, Rempp and Benoit, *J. Polymer Sci.*, Pt. C, No. 4, 473)—DR

PROTEINS

Dog cardiac myosin (Mueller, Franzen, Rice and Olson, *J. Biol. Chem.*, **239**, 1447)—LSP, DR
Gelatin from rat skin collagen (Piez and Carrillo, *Biochemistry*, **3**, 908)—LSP, DR
Contractile sheath protein of the tail of T2 bacteriophage (Sarkar, Sarkar and Kozloff, *Biochemistry*, **3**, 511)—DR
Empty protein shells of turnip yellow mosaic virus (Kaper, *Biochemistry*, **3**, 486)—DR

POLYSACCHARIDES

Dextran (Antonini, Bellelli, Caputo, Chiancone and Rossi-Fanelli, *Biopolymers*, **2**, 27, 35)—LSP, DR

ELECTROLYTES

Alkaline niobium (V) solutions (Nelson and Tobias, *Can. J. Chem.*, **42**, 731)—LSP

DISPERSIONS

Octanoic acid aerosols (Matijevic, Kitani and Kerker, *J. Colloid Sci.*, **19**, 223)—LSP
Colloidal gold (Milligan and Morriss, *J. Am. Chem. Soc.*, **86**, 3461)—LSP
Spinach chloroplasts (Dilley and Vernon, *Biochemistry*, **3**, 817)—LSP
Emulsions and polymer latexes (Graessley and Zufall, *J. Colloid Sci.*, **19**, 516)—LSP, DR
Substituted styrene polymer latexes (Paoletti and Billmeyer, *J. Polymer Sci.*, **A2**, 2049)—DR

If you are interested in light scattering and refractive index measurements on the systems listed above, or many others, from cellulose propionate plastic films (Sperling, TAPPI, **44**, 280) to spider fibers (Matijevic, Ottewill and Kerker, *J. Opt. Soc. Am.*, **51**, 115), contact the **Phoenix Precision Instrument Company**, 3803 North 5th Street, Philadelphia, Pa., 19140, for detailed information on Light Scattering Photometers and Differential Refractometers.

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and Meaning. vols. 1-3. A. D. Aleksandrov, A. N. Kolmogorov, and M. A. Lavrent'ev, Eds. Translated from the Russian edition (Moscow, 1956) by S. H. Gould and T. Bartha (vol. 1), S. H. Gould (vol. 2), and K. Hirsch (vol. 3). M.I.T. Press, Cambridge, Mass., 1964. vol. 1, 371 pp.; vol. 2, 388 pp.; vol. 3, 367 pp. Illus. \$30. The authors' goal was to acquaint a sufficiently wide circle of the Soviet intelligentsia with the various mathematical disciplines, their content and methods, the foundations on which they are based, and the paths along which they have developed. The contributors are: A. D. Aleksandrov; M. A. Lavrent'ev and S. M. Nikol'skiĭ; B. N. Delone; I. G. Petrovskiĭ; S. L. Sobolev and O. A. Ladyzenskaja; V. I. Krylov; M. V. Keldyĭ; K. K. Mardzanisvili and A. B. Postnikov; A. N. Kolmogorov; S. A. Lebedev and L. V. Kantorovič; S. B. Stečkin; D. K. Faddeev; P. S. Aleksandrov; I. M. Gel'fand; and A. I. Mal'cev.

Methods in Microanalysis. vol. 1, *Simultaneous Rapid Combustion*. Translated microchemical research papers of Mirra Osipovna Korshun. J. A. Kuck, Ed. Translated from the Russian by Phyllis L. Bolton and Kurt Gingold. Gordon and Breach, New York, 1964. 576 pp. Illus. \$27.50.

Modular Arithmetic. Burton W. Jones. Blaisdell (Ginn), New York, 1964. 101 pp. Illus. Paper, \$1.65.

Molten Salt Data: Electrical Conductance, Density, and Viscosity (Technical Bulletin Series). George J. Janz, Anthony T. Ward, and Roger D. Reeves. Rensse-

laer Polytechnic Inst., Troy, N.Y., 1964. 183 pp. Paper, \$2.50.

Neutron Physics. K. H. Beckurts and K. Wirtz. Translated from the German edition (ed. 2, 1964) by L. Dresner. Springer, New York, 1964. 454 pp. Illus. \$17.

Noneuclidean Geometry. Herbert Meschkowski. Translated from the second German edition by A. Shenitzer. Academic Press, New York, 1964. 112 pp. Illus. Paper, \$2.45; cloth, \$5.50.

Organic Complexing Reagents: Structure, Behavior, and Application to Inorganic Analysis. D. D. Perrin. Interscience (Wiley), New York, 1964. 377 pp. Illus. \$12.

Organic Syntheses. An annual publication of satisfactory methods for the preparation of organic chemicals. vol. 44. William E. Parham. Wiley, New York, 1964. 141 pp. Illus. \$4.95.

The Origin and Evolution of Atmospheres and Oceans. Proceedings of a conference (New York), April 1963. Peter J. Brancazio and A. G. W. Cameron, Eds. Wiley, New York, 1964. 326 pp. Illus. \$12.50. Seventeen papers: "Geologic history of sea water" by William W. Rubey; "Convection in the earth's mantle" by Peter J. Brancazio; "Degassing of argon and helium from the earth" by Karl K. Turekian; "Comments on the outgassing of the earth" by G. J. Wassenburg; "On the chemical evolution of the terrestrial and cytherean atmospheres" by Heinrich D. Holland; "The history of growth of oxygen in the earth's atmosphere" by L. V.

Berkner and L. C. Marshall; "The escape of helium from the earth's atmosphere" by G. J. F. MacDonald; "Primordial rare gases in meteorites" by Peter Signer; "Isotopic analyses of xenon" by R. O. Pepin; "Interpretation of xenon measurements" by A. G. W. Cameron; "Outgassing processes on the moon and Venus" by Thomas Gold; "Observations of water vapor on Mars and Venus" by A. Dollfus; "The atmosphere of Mercury" by G. Field; "The atmosphere of Venus" by Carl Sagan; "The atmosphere of Mars" by Richard M. Goody; "Are the interiors of Jupiter and Saturn hot?" by P. J. E. Peebles, and "The atmosphere of Jupiter" by R. Wildt.

Paint Flow and Pigment Dispersion. Temple C. Patton. Interscience (Wiley), New York, 1964. 493 pp. Illus. \$16.50.

Paleomagnetism and Its Application to Geological and Geophysical Problems. E. Irving. Wiley, New York, 1964. 417 pp. Illus. \$19.50.

Partial Differential Equations of Mathematical Physics. S. L. Sobolev. Translated from the third Russian edition by E. R. Dawson. T. A. A. Broadbent, Translation Ed. Pergamon, London; Addison-Wesley, Reading, Mass., 1964. 437 pp. Illus. \$14.

Physical Electronics and Circuit Models of Transistors. Paul E. Gray, David DeWitt, A. R. Boothroyd, and James F. Gibbons. Wiley, New York, 1964. 282 pp. Illus. Paper, \$2.65; cloth, \$4.50.

Planetary Theory. Ernest W. Brown and Clarence A. Shook. Dover, New York, 1964 (corrected reprint of 1933 edition). 314 pp. Illus. Paper, \$2.25.

VERGLEICHENDE CHOROLOGIE DER ZENTRALEUROPÄISCHEN FLORA

Edited by Dr. rer. nat. Hermann Meusel, Professor of Botany at the Martin-Luther-University, Halle (Saale), in cooperation with E. Jäger and E. Weinert, Dipl. Biologists, Institut für Systematische Botanik und Pflanzengeographie (Institute for Systematic Botany and Botanical Geography), Halle (Saale), and with the assistance of 63 other experts at home and abroad.

Pteridophytes—Gymnosperms—Monocotyledons—Dicotyledons—(Salicales—Fabales)

Text: About 600 pages with 9 illustrations. Plates: 260 pages with 1000 distribution maps. Size 34 x 30 cm cloth binding, approximately MDN 250, to be published in March 1965.

Through the efforts of Professor Meusel and his co-workers, the geographic distributions of all Central European plant species are presented for the first time. This book will facilitate locating the areas in which Central European plants and their related species can be found. In addition to a comprehensive general discussion of plant species, this volume includes the chronological dates and maps for ferns, club mosses, conifers, and flowering plants, from grasses to leguminous plants. A species whose distribution is not shown cartographically can be located from extensive lists, by means of distribution formulas. A bibliography of the literature completes this volume.

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NEWS AND COMMENT

(Continued from page 1566)

Honorable mention for newspapers goes to Ronald Kotulak, science writer for the *Chicago Tribune*, for a series on plasma physics. The judges reported that, because of the high quality of the magazine entries, they were unable to agree on an honorable mention award in that category.

The awards were established in cooperation with the Westinghouse Educational Foundation in 1946 to help improve the quality of science writing for laymen and to stimulate public interest in and understanding of science.

The **University of Wisconsin** has announced the establishment of a 4-year experiment designed to provide university courses and credits for engineers unable to spend lengthy periods on the Wisconsin campus. The project is scheduled to begin in February, and will enable Wisconsin engineers to update their professional education and earn a master's degree while on the job. The university's educational facilities are being made available under its Articulated Instructional Media program. (Edward Obert, chairman of the mechanical engineering department at the University, Madison 53706.)

Rice University has announced plans for a 10-year expansion and development program. Plans call for an increase in the faculty from 225 to almost 400; a student body increase from 2300 to 4000; tripling the annual operating budget from \$6 million to \$19 million; and addition of \$33 million in capital improvements and endowment, which are to include \$21 million for physical facilities, and \$12 million for endowed professorships and additional faculty salaries. Also planned is the establishment of a program of Latin American studies. Included in proposed projects to strengthen and expand Rice departments is one to enlarge the biology department with the development of studies in biochemistry, biophysics, and cell biology.

Meeting Notes

Rubber chemistry and technology will be discussed at the American Chemical Society's division of rubber chemistry meeting, scheduled 4-7 May, in Miami Beach. General papers in the field and papers dealing

with the chemical and physical testing of rubber are being solicited. Deadline for eight copies of a 200-word abstract: 25 *January*. (G. N. Vacca, Bell Telephone Laboratories, Murray Hill, New Jersey)

Atlantic City, New Jersey, will be the site of the **American Society for Microbiology's** annual meeting, 25-29 April. Contributed abstracts on all phases of microbiology are being solicited. Abstracts must be submitted on ASM abstract forms. Deadline for submission: 6 *January*. (R. W. Sarber, Executive Secretary, ASM, 115 Huron View Blvd., Ann Arbor, Michigan)

Grants, Fellowships, and Awards

The National Science Foundation will sponsor an Academic Year Institute in **Anthropology** for college and junior college teachers, at the University of Colorado during 1965-66. Participants will combine special Institute courses in cultural and physical anthropology with formal work in regular departments and will be eligible for the M.A. degree. Fifteen stipends of \$3000, plus NSF dependency, book, and travel allowances are available. Applicants must be regular, full-time college or junior college teachers, with three or more years of teaching experience and regular teaching commitments involving at least one course in anthropology. Deadline for receipt of applications: 20 *January*. (J. Kelso, AYI in Anthropology, Department of Anthropology, University of Colorado, Boulder)

Courses

The University of Maryland will conduct a seminar in **Analog Simulation and Engineering Analysis**, 25-29 January. The program is being offered in cooperation with the research and computation division of Electronic Associates, Inc., and is designed to give scientists and engineers a knowledge of the analog computer and its applications. The level of instruction will be at first year graduate work, and requires a bachelor's degree in engineering, mathematics, or a physical science, including one semester, or the equivalent, in differential equations. Laboratory sessions will provide students with various programming problems and opportunities to work with EAI TR-20